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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Oh Nam Kwon

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EXAMINER

RUDE, TIMOTHY L

ART UNIT

PAPER NUMBER

2871

MAIL DATE

DELIVERY MODE

05/09/2012

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/788,420	Applicant(s) KWON ET AL.	
	Examiner TIMOTHY L. RUDE	Art Unit 2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2012.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-7, 11-27, 29 and 30 is/are pending in the application.
- 5a) Of the above claim(s) 11-26 is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-7, 27, 29 and 30 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. ____. |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Claims

Claim 1 is amended. Claims 8 and 9 are canceled by Applicant. Claims 29 and 30 are added.

Applicant's amendment is considered to NOT depart from the constructively elected species, lest Applicant be non-responsive.

Examiner has made every effort to fully examine the merits of Applicant's claims within the context of the constructively elected species. Rejections match the structure of the constructively elected species. Also, examiner maintains the structure of Applicant's device as shown in Applicant's Figure 3E is properly rejected by the applied prior art per rejections below.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

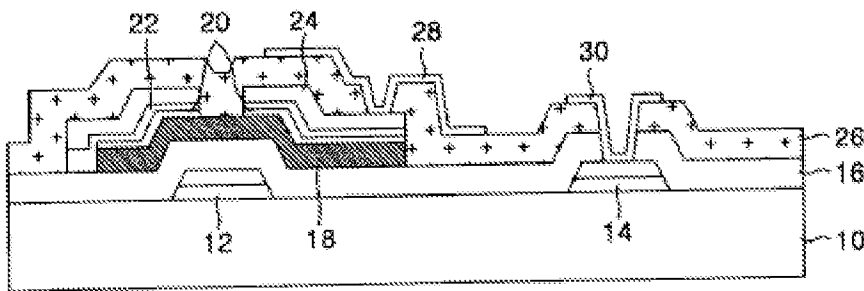
Claims 1-7 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (APA).

As to claim 1, APA discloses a liquid crystal display (LCD) device (Fig. 1E) having a substrate (10), a first conductive layer (12A with no 12B; 12B is optional per Applicant's specification, page 9, per amendment filed 08 May 2007) and a pad layer (14A) on the substrate, wherein the first conductive layer and the pad layer

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are patterned from the same conductive layer; a first insulating layer (16) on the substrate, the first conductive layer and the pad layer, the first insulating layer having a contact hole (above 14A) exposing a portion of the pad layer; (allowing electrical connection to 14A via contact hole above 14A);

FIG. 1E
CONVENTIONAL ART



a semiconductor layer (18) on the first insulating layer;
 second conductive layers (20) on the semiconductor layer,
 third conductive layers, (22A and 24A), on the second conductive layers,
 a second insulating layer (26) on the third conductive layers, the second insulating layer having a first contact hole exposing a portion of the third conductive layers (contact hole for pixel electrode) and a second contact hole (hole for 30) exposing the portion of the pad layer through the first insulating layer,
 a first adhesion conductive layer, 24B, on the exposed portion of a third conductive layer and a second adhesion conductive layer, 14B, on the exposed portion of the pad layer, wherein the first adhesion conductive layer is directly contacted with the third

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conductive layer and the second adhesion conductive layer is directly contacted with the pad layer [per APA Figure 1E];

please note: APA teaches 24B and 14B may include Mo or Cr to improve adhesion per bottom of page 3 of the specification.

a fourth conductive layer (28) on the second insulating layer and the first adhesion conductive layer and electrically contacting a portion of a third conductive layer; a fifth conductive layer (30) on the second insulating layer and the second adhesion conductive layer and electrically contacting the pad layer.

Please note, this is a device claim whereby "formed in" is considered to limit where structure is as opposed to how it got there. Also, something that is at the bottom of a hole is reasonably considered to be in the hole.

APA does not explicitly disclose an embodiment wherein the first and second adhesion conductive layers are respectively contained within the first contact hole and in the second contact hole.

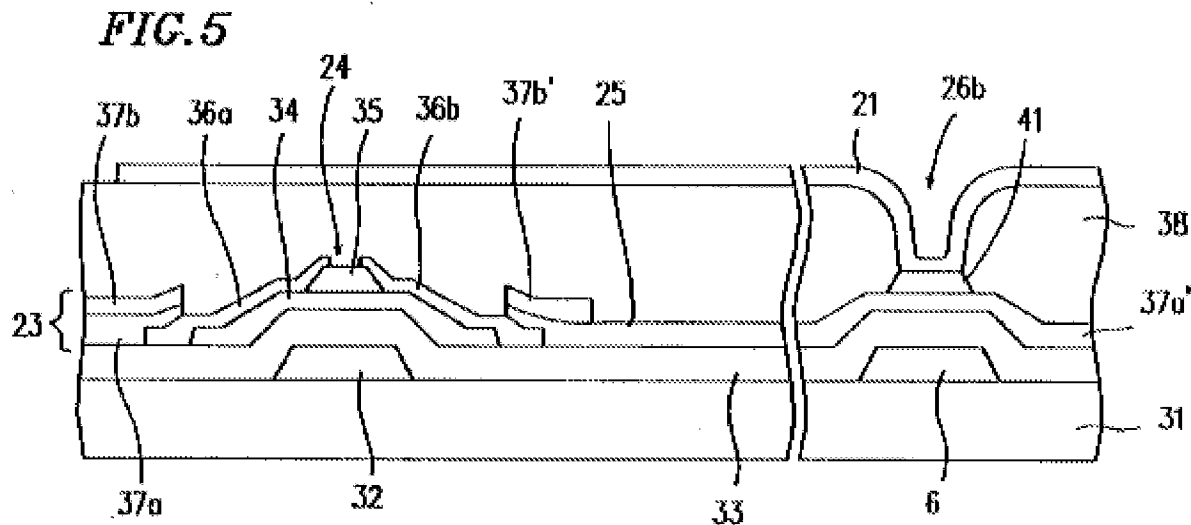
Tagusa teaches at Figure 5 an embodiment wherein such a metal layer, 41, may be deposited [Applicant's "plated"] such that it is exclusively and entirely contained with the contact hole, 26b

[hole in element 38, obvious to use at the bottom of all contact holes:

Applicant's a first adhesion conductive layer located only on the area of the third conductive layer exposed by the first contact hole and a second adhesion conductive layer located only on the area of the pad layer exposed by the second contact hole on wherein the first adhesion

conductive layer is directly contacted with the third conductive layer and the second adhesion conductive layer is directly contacted with the pad layer;],

as an art recognized configuration suitable for the intended purpose of improving adhesion and electrical connectivity of the overlying conductive layer with the underlying conductive layer [col. 12, lines 4-34] which would improve yield and reliability [MPEP 2144.07].



Tagusa is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to form such a metal layer such that it is exclusively and entirely contained at the bottom of a contact hole

[hole in element 38, obvious to use at the bottom of all contact holes:

Applicant's a first adhesion conductive layer located only on the area of the third conductive layer exposed by the first contact hole and a second

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adhesion conductive layer located only on the area of the pad layer exposed by the second contact hole on wherein the first adhesion conductive layer is directly contacted with the third conductive layer and the second adhesion conductive layer is directly contacted with the pad layer;],

as an art recognized configuration suitable for the intended purpose of improving adhesion of the overlying conductive layer with the underlying conductive layer [col. 12, lines 4-34] which would improve yield and reliability [MPEP 2144.07].

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the reflective display invention of APA with the sixth metal layer(s) formed [Applicant's "plated"] such that it is exclusively and entirely contained at the bottom of all contact holes

[hole in element 38, obvious to use at the bottom of all contact holes:

Applicant's a first adhesion conductive layer located only on the area of the third conductive layer exposed by the first contact hole and a second adhesion conductive layer located only on the area of the pad layer exposed by the second contact hole on wherein the first adhesion conductive layer is directly contacted with the third conductive layer and the second adhesion conductive layer is directly contacted with the pad layer;],

as an art recognized configuration suitable for the intended purpose of improving adhesion of the overlying conductive layer with the underlying conductive layer [col. 12,

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lines 4-34] which would improve yield and reliability [MPEP 2144.07]. This would result in a change of configuration from that shown in Applicant's Figure 1E (elements 12A and 14A) to Applicant's Figure 3E (to corresponding elements 34 and 36).

As to claims 2-3, APA discloses an LCD device as recited above where the first conductive layers include aluminum metal (Specification page 3, lines 1-4 and 18-23).

As to claim 4, APA discloses an LCD device as recited above where the second conductive layers (20) include an impurity-doped semiconductor (Specification page 3, lines 4-7).

As to claims 5-6, APA discloses an LCD device as recited above where the third conductive layers have first (22A) and second (24A) parts that include metal and in between the first and second parts is where the semiconductor is etched (Specification page 3, lines 10-12 and page 4, lines 1-4).

As to claim 7, APA discloses an LCD device as recited above where the fourth conductive layer includes a transparent electrode (Specification page 3, lines 14-17).

As to claim 27, APA discloses the device according to claim 1, wherein the first conductive layers are formed of a single metal, 12A and 14A, and the third conductive layers are formed of a single metal, 22A and 24A. Please also note, APA also teaches

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these structures may optionally be a single metal, an alloy, or a multi-layered structure, Specification, pages 3 and 4, as amended.

Claims 29 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Applicant's admitted prior art (APA) in view of Song et al [Song] US PAT 5,851,918.

As to claims 29 and 30, APA discloses the device of claim 1.

APA does not explicitly disclose the types of plating for adhesion layers.

Song teaches that conductive barrier layers, 38 [Applicant's adhesion conductive layers], may be electroplated [Applicant's electric plated] or electroless plated [Applicant's non-electric plated]. Song teaches that electroplating is faster, but electroless plating has preferable characteristics, and the plating speed is adequate [Abstract and entire patent, especially col. 4, line 49 through col. 5, line 15].

Song is evidence that workers of ordinary skill in the art would find the reason, suggestion, or motivation to use conductive barrier layers, 38 [Applicant's adhesion conductive layers], that may be electroplated [Applicant's electric plated] or electroless plated [Applicant's non-electric plated]. Song teaches that electroplating is faster, but electroless plating has preferable characteristics, and the plating speed is adequate [Abstract and entire patent, especially col. 4, line 49 through col. 5, line 15].

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make the conductive barrier layers, 38 [Applicant's

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adhesion conductive layers], by electroplating [Applicant's electric plated] or electroless plating [Applicant's non-electric plated]. Song teaches that electroplating is faster, but electroless plating has preferable characteristics, and the plating speed is adequate [Abstract and entire patent, especially col. 4, line 49 through col. 5, line 15].

Response to Arguments

Applicant's arguments with respect to all claims have been considered but are moot in view of the new ground(s) of rejection.

Any references cited but not applied are relevant to the instant Application.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

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extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TIMOTHY L. RUDE whose telephone number is (571)272-2301. The examiner can normally be reached on Increased Flex Time Program.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glick J. Edward can be reached on (571) 272-2490. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/TIMOTHY RUDE/
Primary Examiner, Art Unit 2871